been principally concerned with biology, the notion of mechanism on which consensus has settled is insufficiently biological. Accordingly, a further step in my discussion will be to develop a more biologically adequate notion of mechanism, one that is itself inspired by the conception of a cell as the basic living unit. Because actual scientific investigation, such as that pursued in cell biology, is not concerned with the abstract character of a mechanism, but with investigating the details of actual mechanisms, I will conclude by examining how mechanisms are studied, and the challenges cell biology faced in discovering the mechanisms in cells that account for the activities of life.

1. HISTORICAL CONCEPTIONS OF MECHANISM

In western thought, the notion of mechanism originated with the design by the ancient Greeks of machines, such as the wedge, to perform work. Greek thought, however, usually contrasted mechanics with nature – machines facilitated accomplishing work that opposed natural forces. This is clear in the pseudo-Aristotelian text *Mechanica*:

> Nature often operates contrary to human interest, for she always follows the same course without deviation, whereas human interest is always changing. When, therefore, we have to do something contrary to nature, the difficulty of it causes us perplexity and art has to be called to our aid. The kind of art which helps us in such perplexities we call Mechanical Skill. (*Mechanica* 847a14f)

Accordingly, nature itself was not conceived as operating mechanically. Aristotelian philosophy in particular advanced an anti-mechanistic conception of nature. It emphasized *telos*, the end state to be achieved by entities of nature, and the form, which resided in bodies and determined their nature and what they did. Thus, Aristotle stressed the distinctive forms (souls) of living things and the activities they made possible (nutrition and reproduction for plants; also sensation and locomotion for animals; and all of these plus reason for humans).

The Aristotelian perspective was still dominant when, in the seventeenth century, numerous natural philosophers rebelled and developed a program of explaining natural phenomena mechanically. Unlike the Greek mechanics, the seventeenth-century mechanists identified natural phenomena as themselves mechanical and offered mechanical explanations of naturally occurring activities.

Although Aristotelian mechanics set nature in opposition to mechanism, the Greek atomist tradition advanced a view closer in spirit to the